Bilingualtek, a Science-Language Approach to Support Latino/a Dual Language Learners: Implementation and Academic Language Outcomes

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INTRODUCTION & PURPOSE

- Less than 30% of instructional time in early childhood classrooms is dedicated to science instruction (Piasta, et al, 2014).
- Many teachers lack resources/training to create activities to foster young children's science-language learning (Park et al., 2017)

Intervention: Bilingualtek (BT)
Science-language instructional approach used by monolingual teachers with Latino dual language learners (DLLs) in Head Start classrooms. Integrates engaging science activities & culturally and linguistically responsive shared readings via E-books.

Pilot Study 2 Purpose:
Inform the iterative development and implementation of Bilingualtek Intervention

Research Questions
RQ1: Assess the feasibility of implementation intervention in Head Start classrooms.
RQ2: Examine the role of the intervention in supporting Academic Language acquisition (English & Spanish) of Latino DLLs.

METHODS and ANALYSIS

- **Mixed methods** approach
- BT implemented by teachers, 4 weeks, 4 days/week, small groups of Latino DLLs

Participants
- 7 monolingual lead & assistant HS teachers (6 female; 1 male)(6 to 22 years of experience in ECE) (1 GED; 2 AAS; 4 BK license)
- 22 Latino/a DLL children, ages 4-5
- 7 classrooms (4 Intervention & 3 control group)

Measures (Pre and Post)
- English and Spanish Language: ROWPVT & TVIP.
- Academic language
  - Curriculum-based researcher-developed bilingual assessment iPad app
- Fidelity of implementation checklists

Analysis
- Descriptive statistics, t-tests (within & between groups), Pearson correlations

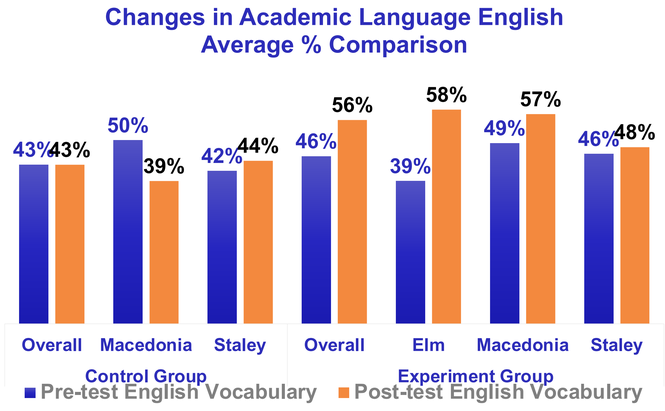
RESULTS

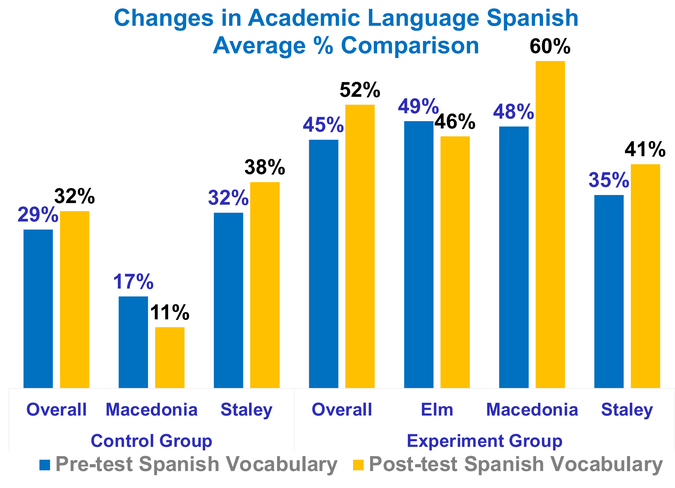
RQ1: Assess feasibility of implementation (FOI) of the intervention in Head Start classrooms

Unit	FOI by Teacher	FOI by Assistant	FOI Overall
Balls in motion	60-61%	27-38%	51-53%
Reduce, Reuse & Recycle	59-70%	0-8%	55-56%

RESULTS

RQ2: BT and Academic Language acquisition





Assessment	Between Groups	Within group differences
Standardized Language	No sig. differences	No sig. differences
Academic Language Probe	**Pretest**: No sig. differences **Post-test: English** No differences **Spanish: p = .050***	**Pre-Post test English** C: p = 1.0. **Exp: p = .051** **Spanish** No differences

IMPLICATIONS and NEXT STEPS

RQ1: Feasibility:
- HS teachers can implement BT's intervention to support academic language instruction **with fidelity 59-70%**
- Teacher assistants may need more training and support.

Overall participants found training and coaching activities helpful.

RQ2: Academic Language:
BT approach associated:
- **Within**: Greater pre-post gains in English academic language by the **experimental group**
- **Between:** Greater **posttest** gains in Spanish academic language by the **experimental group** compared to control group

Positive association between BT & Academic Language (English & Spanish)

LIMITATIONS
Pilot data, small sample size (7 teachers & assistants), 22 children, short duration of BT Implementation (4 wks.)

NEXT STEPS
Findings will inform iterative refinement:
- BT activities (science activities & shared e-Book readings)
- Academic Language Assessment
- Teacher & Assistants training/coaching **to increase fidelity of implementation** in year 3

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